

Comet, 1860, III. and in the great Comet, 1861, II. accompanied by a steel engraving of the former.

XIII. The Outer Faint Veil. — Containing an account of this feature, with a reference to a similar peculiarity in the Comet, 1860, III.

XIV. On the Direction of the Initial Axis of the Tail.

XV. Conclusion. — This Section gives a general summary of the contents of the volume.

The naked-eye and telescopic views of the Comet, shown on a dark ground, are very beautiful specimens of steel engraving.

*P. A. Hansen, Darlegung der theoretischen Berechnung der in den Mondtafeln angewandten Störungen; Erste Abhandlung.* Leipzig, 1862. (forms part of t. vii. of the *Abhandlungen der mathematisch-physischen Classe der Königlich. Sächsischen Gesellschaft der Wissenschaften*, pp. 93-497.)

In this elaborate memoir—the first part of the anxiously expected Theory of Prof. Hansen's Lunar Tables—the perturbations in longitude are completely calculated; but of the perturbations of the latitude and radius vector respectively, only the portion which the author designates as the principal one. The method employed is stated to be with a slight variation that explained in the *Fundamenta Nova Investigationis orbitæ veræ quam Luna perlustrat*, the demonstration of the fundamental formulæ is however given *de novo*. It is hardly necessary to mention that the numerical values of the coefficients are substituted in the first instance in the formulæ, and the multiplications and integrations carried out numerically. The author has compared his values of the perturbations of the longitude with those of Plana and Damoiseau, the differences being in some instances not inconsiderable; but he has not as yet made the comparison with those of Delaunay. At the conclusion of the memoir the author investigates the perturbations which depend on the figure of the Earth, and the mass and figure of the Moon.

*Nouvelles Recherches sur la Figure des Atmosphères des Corps Célestes.* Par M. Edouard Roche. 4to, Paris, 1862. (Extrait des Mémoires de l'Académie de Montpellier, Section des Sciences, 1862.)

The present Memoir is a sequel to one published in the year 1854. The author, on the suggestion of M. Faye, has

since introduced into his calculations the hypothesis of a repulsion exerted by the Sun on the Cometary Atmosphere; the repulsion is assumed to act in the direction of the radius vector, and to vary as the inverse square of the distance from the Sun; but the intensity is supposed to depend on the matter operated upon, viz. that, while nothing for the nucleus, it becomes sensible or even considerable for the exceedingly rare atmosphere of the Comet.

The equation of the *couche de niveau* or level surface (which is of course a surface of revolution about the Sun's radius vector) is obtained in polar co-ordinates in a very simple form; for sufficiently small values of the parameter which determines the particular surface, the section of the surface is a sort of oval, elongated however on the side away from the Sun. Geometrically, however, there is a detached infinite branch of the section; and, when the parameter acquires a certain limiting value, the two branches unite together so as to form a curve with a double point on the side opposite the Sun; the *surface* has then a conical point. The physical conclusion is, that as soon as we come to this limiting form of the level surface, the atmosphere, instead of continuing to form finite envelopes surrounding the nucleus on all sides, will, so to speak, flow out through the conical point of the surface, and so give rise to a tail. Want of space prevents the giving a more complete account of this very interesting investigation.

---

### *Instrument to be disposed of.*

A Fraunhofer Equatoreal, with Circles read by two sets of Verniers to  $4^s$  and  $1'$ , in good order. Inquiries to be addressed to the Assistant Secretary.

---

### ERRATUM.

Vol. XXIII., page 16, heading of Table C, *for* "in the year 1861," *read*,  
"the years 1854 to 1860."